

Ispitivanje antifungalnog dejstva gljive *Trichoderma harzianum* na skladišne fitopatogene

Truljenje voća i povrća izazvano fitopatogenim gljivama tokom transporta i skladištenja predstavlja globalni problem koji izaziva velike ekonomske gubitke. Iako tretman sintetičkim fungicidima i dalje predstavlja glavni vid borbe protiv fitopatogena, njihov štetan efekat na zdravlje ljudi i životnu sredinu doveo je do okretanja ka alternativnim metodama, kao što je biološka kontrola. *Trichoderma harzianum* je filamentozna zemljišna gljiva koje je poslednjih godina sve više istraživana kao potencijalni biokontrolni agens. Ova vrsta pokazuje antagonističko dejstvo prema patogenim gljivama kroz produkciju antifungalnih metabolita, kao i litičkih enzima hitinaza i glukanaza. Cilj ovog istraživanja bio je ispitivanje antifungalnog dejstva *T. harzianum* na skladišne fitopatogene iz rodova *Rhizopus*, *Penicillium* i *Monilinia*, izolovane sa plodova paradajza i breskve. Antagonističko dejstvo *T. harzianum* ispitivano je testom kompeticije na čvrstoj podlozi, kao i ispitivanjem uticaja isparljivih komponenti, i pokazano je da je procenat inhibicije rasta micelije iznosio do 38.8% kod *Rhizopus* sp. i 31.7% kod *Penicillium* sp., dok je umereni uticaj isparljivih jedinjenja zabeležen jedino na *Penicillium* sp. Antifungalno dejstvo vodenog i alkoholnog ekstrakta *T. harzianum* potvrđeno je *in vivo* testom na plodovima jabuke, gde je procenat redukcije nekroze nakon dva dana infekcije sa *Monilinia* sp. iznosio 73% kod tretmana vodenim i 67.7% kod tretmana alkoholnim ekstraktom, dok je kod infekcije sa *Penicillium* sp. vodeni ekstrakt doveo do redukcije od 65.4%. Dalja istraživanja, koja bi uključivala veći broj patogenih gljiva kao i različite načine ekstrakcije, trebala bi biti nastavljena u cilju potencijalne upotrebe vrste *T. harzianum* u biološkoj kontroli fitopatogena.

Antifungal Activity of *Trichoderma harzianum* Against Plant Phytopathogens

Rotting of fruits and vegetables caused by phytopathogenic fungi during transport and storage has become a global problem causing major economic losses. Although treatment with synthetic fungicides continues to be the most common form of combating this problem, their adverse effects on human health and the environment have led to a shift towards alternative methods, such as biological control. *Trichoderma harzianum* is a filamentous soil fungi that has been increasingly studied as a potential biocontrol agent in recent years. This species exhibits antagonistic effects against pathogenic fungi through the production of antifungal metabolites as well as lytic enzymes like chitinases and glucanases. The aim of this study is to investigate the antifungal activity of *T. harzianum* against phytopathogens from genera *Rhizopus*, *Penicillium* and *Monilinia*, isolated from tomato and peach fruits. The antagonistic effect of *T. harzianum* was tested by the dual culture method and the percentage of mycelial growth inhibition was shown to be 38.8% for *Rhizopus* sp. and 31.7% for *Penicillium* sp. The potential effect of volatile compounds was determined using the inverted plate method and observed only for *Penicillium* sp. Antifungal activity of the aqueous and alcoholic extracts of *T. harzianum* was confirmed by an *in vivo* test on apple fruits, where the percentage of necrosis reduction after 2 days of infection with *Monilinia* sp. was 73% for the aqueous and 67.7% for the alcoholic extract, whereas for the infection with *Penicillium* sp. the aqueous extract resulted in a reduction of 65.4%. Further research should include a larger number of tested pathogenic fungi and different extraction methods in order to get closer to commercialization of *T. harzianum* as a biocontrol agent.

Mina Dangubić (2000), Beograd, učenica 4.
razreda Četvrte beogradska gimnazije

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